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MORBIDITY AND MORTALITY WEEKLY REPORT

Current Trends

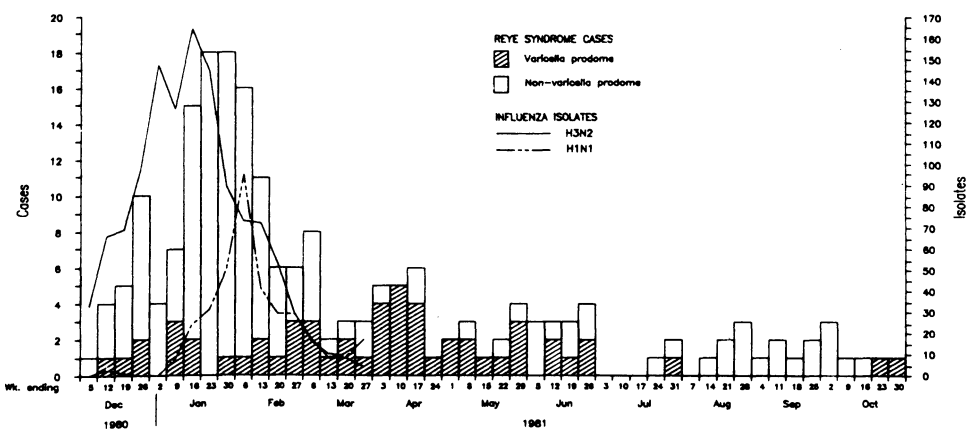
National Surveillance for Reye Syndrome, 1981: Update, Reye Syndrome and Salicylate Usage

For the period December 1, 1980-October 31, 1981,* CDC received written reports of 221 cases of Reye syndrome that met the CDC case definition (*1*). These cases were reported from 39 states and the District of Columbia. The sex, age, and racial distribution of patients was similar to that reported in previous years. Of patients for whom sex was known, 51% were female. Of patients of known age, 35% (73) were ≤4 years of age, 59% (124) were 5-14 years, and 6% (12) were ≥15 years. Among 211 patients of known race, 94% were white, 4% black, and 2% of Asian extraction. Of the patients with a reported antecedent illness, 60% (121) had respiratory symptoms, 30% (60) had varicella, and 10% (22) had diarrhea.

Seventy-seven percent of the patients with Reye syndrome were hospitalized in the period December 5-March 27, coincident with reports of increased influenza A(H3N2/H1N1) virus activity in the United States. Numbers of hospitalizations rose in direct proportion to increases in numbers of reports of influenza A(H3N2) virus activity (Figure 1). The number of Reye syndrome cases peaked approximately 1 week after the peak number of reported influenza A (H3N2) isolates, presumably reflecting the 5-7 day interval between antecedent illness and

*For the purposes of surveillance, Reye syndrome years extend from December 1 to November 30 of the following year. This report is based upon preliminary data.

FIGURE 1. Reye syndrome cases by week of hospitalization, and influenza isolates, by week of report, December 1, 1980-October 30, 1981



Reye Syndrome — Continued

hospitalization of patients with Reye syndrome (*2*). The number of cases of Reye syndrome remained elevated during the peak period of H1N1 activity.

The incidence of Reye syndrome reported in 1980-1981 was similar to that reported in a previous year (1977-1978) of influenza A (H3N2/H1N1) activity and was approximately half that reported in years when influenza B or influenza A (H1N1) was prevalent (Table 1).

In 1981, of 208 reported cases for which the outcome was reported, there were 58 deaths, for a case fatality ratio (CFR) of 28%. This ratio is approximately equal to the average CFR for the preceding 3 years and one-third lower than that reported during the first 2 surveillance periods (1973-1974, 1976-1977) (Table 1). CFRs reported to CDC probably represent overestimates, because of a tendency for physicians and health departments to report severe illness or death more consistently than mild illness. Although the lower CFRs in recent years may have resulted in part from more complete reporting of mild cases, it is noteworthy that a larger percentage of all patients reported in recent years were admitted to the hospital in an early stage of the syndrome (suggesting earlier recognition). Furthermore, there has been a decrease in mortality rates among patients admitted in each stage of encephalopathy (suggesting improvements in therapy).

In addition to 3 previously reported case-control studies conducted in Arizona, Michigan and Ohio (*3,4*), a fourth study, reported to CDC by the Michigan Department of Public Health, demonstrated a relationship between Reye syndrome and the ingestion of salicylates during the antecedent illness. The goal of this study was to test the reproducibility of findings of the earlier study conducted by the Michigan Department of Public Health during the 1979-1980 influenza season. The recent study concentrated on all medications, including dosage and frequency of administration, taken during the illness preceding Reye syndrome. Patients and controls (1-3 controls for each patient) matched for year in school (± 1), race, febrile response (<100 F, 100 F-102.9 F, and ≥103 F) and nature of prodromal illness (i.e., chickenpox or respiratory or gastrointestinal illness) were selected. Interviews were conducted as soon as possible after each case was reported (mean 5.5 days).

All 12 patients with Reye syndrome versus 12 of 29 (41.4%) controls reported using medications containing salicylates during the prodromal illness ($p < 0.001$). None of the 12 patients versus 16 of 29 (55.2%) controls received a product containing acetaminophen ($p < 0.005$). Analysis of factors that might confound the usage of salicylates, including mean

TABLE 1. Incidence of Reye syndrome, by year, United States, 1976-1981

Year	Major influenza activity	Number of cases	Incidence*	Death to case ratio	
				Number of deaths/cases†	Ratio (%)
1973-1974§	B	379	0.58	157/379	41
1976-1977	B	454	0.71	156/373	42
1977-1978	A (H3N2/H1N1)	237	0.37	66/225	29
1978-1979	A (H1N1)	389	0.62	113/349	32
1979-1980	B	517	0.88	114/516	22
1980-1981	A (H3N2/H1N1)	221¶	0.31	58/210	28

*Cases/100,000 population < 18 years of age.
†With known outcome.
§For the period December 15, 1973-June 30, 1974.
¶Preliminary count.

Reye Syndrome — Continued

duration of viral illness, mean age of parents, mean number of medications received during the viral illness, and mean peak temperature reported, revealed that patient and control groups were similar. The total amount of salicylates received by children with Reye syndrome during their prodromal illness ranged from 19.4 mg/kg body weight to 324 mg/kg (mean 121.6 mg/kg), and the maximum daily dosage received ranged from 10.8 to 78.6 mg/kg (mean 41.7 mg/kg).

Reported by W Hall, MD, Michigan Dept of Public Health; Viral Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: Previous statements on the possible association of medications and Reye syndrome have been issued by an NIH consensus conference (5) the FDA (6) and CDC (*1*). These earlier statements were made before the availability of the study results presented above.

All 4 studies reported from Arizona, Michigan (2 studies), and Ohio, showed a relationship between Reye syndrome and salicylates. As in all epidemiologic studies, a number of issues must be considered in interpreting results and reaching conclusions. To evaluate the data, CDC recently solicited assistance from 8 outside consultants* who were asked to review the 4 reported studies and assess the strength of the association between salicylate use and Reye syndrome.

Issues cited and discussed by CDC in its report on the Ohio and first Michigan studies included 1) recall bias, i.e., difficulties in obtaining comparable and accurate medication histories for patients following a significant event (Reye syndrome) when compared with controls with a relatively mild illness, and the difficulty of accurate recall of events several weeks later; 2) severity of illness, i.e., the possibility that patients with Reye syndrome had more severe antecedent illness and thus may have been predisposed to take more medications, including salicylates, than did matched controls; and 3) the comparability of viral infections in case and control groups; serologic studies were not done as part of these investigations.

Some additional areas of concern noted by the consultants, industry representatives and others included : 1) interviewer bias, i.e., the knowledge of the interviewer of the case-control status of the subject; 2) interview techniques that were not comparable, i.e., medication histories were more often verified (including checking of medication labels) for controls (whose parents were interviewed at home) than for patients (whose parents were usually interviewed in the hospital), which may have resulted in a tendency for parents of patients more often than for parents of controls to misclassify the generic drug used by their children; 3) possibile misclassification of Reye syndrome, i.e., since biopsies were not routinely performed, it was possible that some persons with mild illness might be included in the group of patients diagnosed as having Reye syndrome.

After reviewing the data from all 4 studies and discussing the various epidemiologic and analytic methods and results, the CDC consultants concluded that it was unlikely for the limitations of the studies, either singly or in combination, to explain totally the strength and consistency of the observed association between Reye syndrome and salicylates. The consultants felt there was "...sufficient evidence to support the cautionary statements on salicylate usage that had been published previously by the Centers for Disease Control (*4*) and the NIH Consensus Development Conference (*5*)." Furthermore, it was the consensus of the consultants

*The consultants included: E. Russell Alexander, M.D., Tucson, AZ; David J. Lang, M.D., Baltimore, MD; Franz Rosa, M.D., Rockville, MD; Ralph Kauffman, M.D., Detroit, MI; Edward A. Mortimer, Jr., M.D., Cleveland, OH; Stuart Hartz, Sc.D., Boston, MA; Jacqueline Partin, M.S., Long Island, NY; and Brian Strom, M.D., M.P.H., Philadelphia, PA.

Reye Syndrome — Continued

that "...until the nature of the association between salicylates and Reye syndrome is clarified, the use of salicylates should be avoided, when possible, for children with varicella infections and during presumed influenza outbreaks." In addition, these consultants suggested that it would be prudent to reserve the use of all antipyretic agents for persons who have an illness of such a nature that the need to reduce elevated temperatures outweighs other considerations (*7*).

In summary, these studies indicate to CDC that salicylates may be a factor in the pathogenesis of Reye syndrome, although the observed epidemiologic association does not prove causality. The exact pathogenesis of this disease and the possible role of salicylates in its pathogenesis remain to be determined. Additional well-controlled studies are also needed. Until definitive information is available, CDC advises physicians and parents of the possible increased risk of Reye syndrome associated with the use of salicylates for children with chickenpox or influenza-like illness.

References

1. CDC. Follow-up on Reye syndrome—United States. MMWR 1980;30:321-2.
2. Corey L, Rubin RJ, Hattwick MA, Noble GR, Cassidy E. A national outbreak of Reye's syndrome; its epidemiologic relationship to influenza B. Am J Med 1976;61:615-25.
3. Starko KM, Ray CG, Dominguez LB, Stromberg WL, Woodall DF. Reye's syndrome and salicylate use. Pediatrics 1980;66:859-64.

(Continued on page 61)

TABLE I. Summary — cases of specified notifiable diseases, United States

DISEASE	5th WEEK ENDING			CUMULATIVE, FIRST 5 WEEKS		
	February 6 1982	February 7 1981	MEDIAN 1977-1981	February 6 1982	February 7 1981	MEDIAN 1977-1981
Aseptic meningitis	89	57	43	408	337	253
Brucellosis	2	3	3	6	9	9
Encephalitis: Primary (arthropod-borne & unspec.)	21	9	11	63	67	53
Post-infectious	1	2	3	2	7	9
Gonorrhea: Civilian	18,506	20,540	19,189	92,273	96,877	92,424
Military	682	719	719	2,764	2,987	2,762
Hepatitis: Type A	445	536	558	1,837	2,195	2,459
Type B	360	364	306	1,567	1,607	1,387
Non A, Non B	44	N	N	115	N	N
Unspecified	199	210	172	814	965	868
Legionellosis	4	N	N	20	N	N
Leprosy	4	4	4	6	14	14
Malaria	7	33	9	51	123	47
Measles (rubeola)	14	42	255	50	168	871
Meningococcal infections: Total	58	117	62	271	420	264
Civilian	58	117	62	270	419	263
Military	–	–	–	1	1	1
Mumps	65	101	408	353	469	1,424
Pertussis	13	29	29	60	76	99
Rubella(German measles)	34	39	118	137	206	502
Syphilis (Primary & Secondary): Civilian	708	645	517	3,214	2,914	2,295
Military	7	2	7	52	32	29
Tuberculosis	481	485	510	2,046	2,004	2,054
Tularemia	2	2	2	6	11	10
Typhoid fever	7	14	7	40	43	27
Typhus fever, tick-borne (RMSF)	2	–	1	13	6	5
Rabies, animal	59	95	55	364	469	245

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1982		CUM. 1982
Anthrax	–	Poliomyelitis: Total	–
Botulism (Calif. 2)	10	Paralytic	–
Cholera	1	Psittacosis	6
Congenital rubella syndrome	–	Rabies, human	–
Diphtheria	–	Tetanus (Nev. 1, Calif. 1)	5
Leptospirosis (Ark. 1, Wash. 3)	7	Trichinosis (N.J. 8)	13
Plague	1	Typhus fever, flea-borne (endemic, murine) (Ala. 1)	1

N: Not notifiable

TABLE III. Cases of specified notifiable diseases, United States, weeks ending February 6, 1982 and February 7, 1981 (5th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	ENCEPHALITIS		GONORRHEA (Civilian)		HEPATITIS (Viral), by type				LEGIONELLOSIS	LEPROSY
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	1982	CUM. 1982	CUM. 1982	CUM. 1982	CUM. 1982	CUM. 1981	1982	1982	1982	1982	1982	CUM. 1982
UNITED STATES	89	6	63	2	92,273	96,877	445	360	44	199	4	6
NEW ENGLAND	2	-	1	-	2,092	2,572	9	6	1	7	-	-
Maine	1	-	-	-	117	124	-	1	-	-	-	-
N.H.	-	-	-	-	84	96	2	-	1	-	-	-
Vt.	-	-	-	-	50	40	1	-	-	-	-	-
Mass.	-	-	1	-	812	970	2	2	-	7	-	-
R.I.	1	-	-	-	136	111	4	-	-	-	-	-
Conn.	-	-	-	-	893	1,231	-	3	-	-	-	-
MID. ATLANTIC	11	-	9	-	10,466	10,836	57	52	1	23	2	-
Upstate N.Y.	3	-	4	-	1,325	1,344	15	21	-	10	-	-
N.Y. City	5	-	3	-	4,831	4,125	22	19	-	2	2	-
N.J.	1	-	-	-	1,809	2,650	20	12	1	11	-	-
Pa.	2	-	2	-	2,501	2,717	U	U	U	U	-	-
E.N. CENTRAL	2	-	15	-	11,342	15,000	51	31	3	26	-	-
Ohio	-	-	1	-	3,480	5,664	15	8	1	4	-	-
Ind.	-	-	7	-	1,844	1,157	8	7	-	13	-	-
Ill.	-	-	-	-	1,661	3,484	17	7	2	2	-	-
Mich.	2	-	6	-	3,208	3,402	9	8	-	7	-	-
Wis.	-	-	1	-	1,149	1,293	2	1	-	-	-	-
W.N. CENTRAL	3	1	3	-	4,413	4,961	13	21	1	4	-	-
Minn.	-	-	-	-	686	760	8	3	1	1	-	-
Iowa	-	-	2	-	427	455	1	3	-	-	-	-
Mo.	2	1	1	-	2,056	2,327	4	13	-	3	-	-
N. Dak.	-	-	-	-	49	46	-	-	-	-	-	-
S. Dak.	-	-	-	-	139	126	-	-	-	-	-	-
Nebr.	-	-	-	-	224	370	-	1	-	-	-	-
Kans.	1	-	-	-	832	877	-	1	-	-	-	-
S. ATLANTIC	18	2	7	1	24,545	24,262	26	95	11	10	1	-
Del.	-	-	-	-	368	395	-	-	1	-	-	-
Md.	3	-	4	-	3,150	2,598	6	16	2	2	1	-
D.C.	-	-	-	-	1,108	1,544	-	4	-	-	-	-
Va.	4	2	2	-	1,873	2,299	4	14	5	3	-	-
W. Va.	2	-	-	-	242	314	3	5	-	-	-	-
N.C.	6	-	1	-	4,050	4,063	5	12	-	2	-	-
S.C.	-	-	-	-	2,030	2,244	-	12	-	1	-	-
Ga.	-	-	-	-	4,605	5,012	2	14	1	-	-	-
Fla.	3	-	-	1	7,119	5,793	6	18	2	2	-	-
E.S. CENTRAL	15	-	4	-	7,345	8,035	24	31	2	2	-	-
Ky.	13	-	-	-	953	1,014	15	10	-	-	-	-
Tenn.	1	-	3	-	2,808	2,860	8	12	-	2	-	-
Ala.	-	-	1	-	2,041	2,810	1	9	2	-	-	-
Miss.	1	-	-	-	1,543	1,351	-	-	-	-	-	-
W.S. CENTRAL	6	-	4	-	14,124	14,329	90	20	2	64	-	-
Ark.	-	-	-	-	1,229	920	-	-	1	1	-	-
La.	-	-	-	-	2,152	2,123	16	2	-	7	-	-
Okla.	1	-	3	-	1,462	1,385	9	3	1	7	-	-
Tex.	5	-	1	-	9,281	9,901	65	15	-	49	-	-
MOUNTAIN	6	-	5	1	3,383	3,359	64	16	6	17	-	-
Mont.	1	-	-	-	177	118	-	-	-	-	-	-
Idaho	-	-	-	-	143	145	4	-	-	-	-	-
Wyo.	-	-	-	-	109	97	24	-	3	-	-	-
Colo.	1	-	1	1	983	831	7	2	2	5	-	-
N. Mex.	-	-	-	-	396	474	18	1	-	1	-	-
Ariz.	-	-	1	-	911	1,035	5	1	1	3	-	-
Utah	-	-	-	-	135	166	1	2	-	-	-	-
Nev.	4	-	3	-	529	493	5	10	-	8	-	-
PACIFIC	26	3	15	-	14,563	13,523	111	88	17	46	1	6
Wash.	4	-	2	-	1,198	943	11	-	-	-	1	-
Oreg.	-	-	-	-	833	1,113	3	7	2	2	-	-
Calif.	14	3	13	-	11,920	10,817	96	78	15	44	-	3
Alaska	2	-	-	-	365	345	-	1	-	-	-	-
Hawaii	6	-	-	-	247	305	1	2	-	-	-	3
Guam	U	-	-	-	-	21	U	U	U	U	U	-
P.R.	-	-	-	-	137	308	2	3	-	1	-	-
V.I.	-	-	-	-	24	-	-	-	-	-	-	-
Pac. Trust Terr.	U	-	-	-	-	55	U	U	U	U	U	-

N: Not notifiable U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending February 6, 1982 and February 7, 1981 (5th week)

REPORTING AREA	MALARIA		MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS (Total)		MUMPS		PERTUSSIS	RUBELLA		
	1982	CUM. 1982	1982	CUM. 1982	CUM. 1981	1982	CUM. 1982	1982	CUM. 1982	1982	1982	CUM. 1982	CUM. 1981
UNITED STATES*	7	51	14	50	168	58	271	65	353	13	34	137	206
NEW ENGLAND	1	3	-	3	6	2	12	10	34	2	1	6	41
Maine	-	-	-	-	-	-	2	2	9	-	-	-	23
N.H.	-	-	-	1	2	-	3	1	4	-	1	6	16
Vt.	-	-	-	2	1	-	1	-	3	-	-	-	-
Mass.	-	2	-	-	-	1	1	5	13	-	-	-	2
R.I.	-	-	-	-	-	-	1	2	3	2	-	-	-
Conn.	1	1	-	-	3	1	4	-	2	-	-	-	-
MID. ATLANTIC	-	2	2	15	52	10	37	7	25	2	4	7	40
Upstate N.Y.	-	-	1	9	31	2	8	5	11	2	4	5	15
N.Y. City	-	2	1	5	6	1	8	-	6	-	-	2	8
N.J.	-	-	-	-	5	2	13	1	3	-	-	-	15
Pa.	-	-	-	1	10	5	8	1	5	-	-	-	2
E.N. CENTRAL	-	5	1	1	5	5	21	22	139	3	3	16	38
Ohio	-	-	-	-	-	2	8	-	60	-	-	-	-
Ind.	-	-	1	1	-	1	1	2	8	2	-	1	16
Ill.	-	-	-	-	-	-	3	7	13	-	-	8	7
Mich.	-	4	-	-	5	2	9	8	44	-	-	1	5
Wis.	-	1	-	-	-	-	-	5	14	1	3	6	10
W.N. CENTRAL	-	1	-	-	-	2	13	2	16	-	-	5	6
Minn.	-	-	-	-	-	-	4	-	-	-	-	1	-
Iowa	-	-	-	-	-	-	1	-	5	-	-	-	-
Mo.	-	1	-	-	-	1	6	1	3	-	-	2	-
N. Dak.	-	-	-	-	-	-	1	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	-	-	-	-	-	1	1	1	8	-	-	2	6
S. ATLANTIC	1	8	-	7	32	12	63	5	49	-	1	8	13
Del.	-	-	-	-	-	-	-	-	-	-	-	-	-
Md.	-	4	-	-	-	-	3	-	3	-	-	-	-
D.C.	-	1	-	-	-	-	-	-	-	-	-	-	-
Va.	-	1	-	7	3	1	5	3	7	-	1	7	-
W. Va.	-	-	-	-	3	-	1	1	26	-	-	-	6
N.C.	-	-	-	-	-	5	11	-	2	-	-	-	2
S.C.	-	1	-	-	-	1	8	-	2	-	-	-	3
Ga.	-	-	-	-	16	4	22	-	2	-	-	1	-
Fla.	1	1	-	-	10	1	13	1	7	-	-	-	2
E.S. CENTRAL	-	-	1	3	-	3	19	2	5	-	1	5	3
Ky.	-	-	-	1	-	-	1	-	1	-	1	5	3
Tenn.	-	-	1	2	-	1	8	1	2	-	-	-	-
Ala.	-	-	-	-	-	2	10	1	1	-	-	-	-
Miss.	-	-	-	-	-	-	-	-	1	-	-	-	-
W.S. CENTRAL	-	2	3	5	10	9	38	4	16	-	1	12	11
Ark.	-	-	-	-	-	-	2	-	2	-	-	-	-
La.	-	-	-	-	-	-	3	-	-	-	-	-	-
Okla.	-	-	-	-	-	1	4	-	-	-	-	-	-
Tex.	-	2	3	5	10	8	29	4	14	-	1	12	11
MOUNTAIN	1	2	-	-	5	4	17	2	10	-	-	2	2
Mont.	-	-	-	-	-	1	3	-	1	-	-	-	-
Idaho	-	-	-	-	-	-	-	-	2	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	1	-
Colo.	-	1	-	-	-	3	8	1	1	-	-	-	-
N. Mex.	-	-	-	-	-	-	1	-	-	-	-	-	-
Ariz.	1	1	-	-	-	-	2	-	3	-	-	-	1
Utah	-	-	-	-	-	-	1	1	2	-	-	1	1
Nev.	-	-	-	-	5	-	2	-	1	-	-	-	-
PACIFIC	4	28	7	16	58	11	51	11	59	6	23	76	52
Wash.	-	1	5	5	1	2	6	3	15	2	3	4	11
Oreg.	-	2	-	-	-	1	14	-	-	-	-	-	-
Calif.	4	24	2	10	57	6	28	8	44	4	20	71	41
Alaska	-	-	-	-	-	2	3	-	-	-	-	-	-
Hawaii	-	1	-	1	-	-	-	-	-	-	-	1	-
Guam	U	-	U	-	2	U	-	U	-	U	U	-	-
P.R.	-	-	2	6	31	-	-	-	2	-	2	2	-
V.I.	-	-	-	-	1	-	-	-	-	-	-	-	-
Pac. Trust Terr.	U	-	U	-	-	U	-	U	-	U	U	-	1

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending February 6, 1982 and February 7, 1981 (5th week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES, Animal
	CUM. 1982	CUM. 1981	1982	CUM. 1982	CUM. 1982	1982	CUM. 1982	1982	CUM. 1982	CUM. 1982
UNITED STATES	3,214	2,914	481	2,046	6	7	40	2	13	364
NEW ENGLAND	59	79	6	53	–	2	4	–	–	3
Maine	–	1	1	4	–	–	–	–	–	3
N.H.	–	3	–	2	–	–	–	–	–	–
Vt.	–	1	–	3	–	1	2	–	–	–
Mass.	40	40	4	34	–	1	2	–	–	–
R.I.	5	9	1	7	–	–	–	–	–	–
Conn.	14	25	–	3	–	–	–	–	–	–
MID. ATLANTIC	447	466	101	316	–	–	4	–	–	2
Upstate N.Y.	29	48	13	55	–	–	1	–	–	–
N.Y. City	307	282	42	136	–	–	2	–	–	–
N.J.	38	52	12	39	–	–	1	–	–	–
Pa.	73	84	34	86	–	–	–	–	–	2
E.N. CENTRAL	104	191	88	340	–	–	3	–	–	32
Ohio	23	35	13	71	–	–	1	–	–	2
Ind.	23	13	23	55	–	–	–	–	–	3
Ill.	20	99	32	127	–	–	–	–	–	15
Mich.	29	32	17	68	–	–	2	–	–	–
Wis.	9	12	3	19	–	–	–	–	–	12
W.N. CENTRAL	61	50	8	38	4	–	2	1	1	127
Minn.	12	14	–	5	–	–	–	–	–	30
Iowa	1	3	–	3	–	–	1	–	–	39
Mo.	38	28	7	17	3	–	1	1	1	14
N. Dak.	2	–	1	2	–	–	–	–	–	15
S. Dak.	–	–	–	2	–	–	–	–	–	7
Nebr.	–	2	–	1	–	–	–	–	–	14
Kans.	8	3	–	8	1	–	–	–	–	8
S. ATLANTIC	902	722	80	407	–	–	3	1	8	55
Del.	2	1	–	1	–	–	–	–	–	–
Md.	55	55	–	58	–	–	1	1	5	2
D.C.	59	68	3	14	–	–	–	–	–	–
Va.	60	60	1	28	–	–	1	–	–	29
W. Va.	3	–	1	9	–	–	1	–	–	3
N.C.	75	55	19	64	–	–	–	–	3	–
S.C.	56	57	6	40	–	–	–	–	–	4
Ga.	191	179	16	78	–	–	–	–	–	14
Fla.	401	247	34	115	–	–	–	–	–	3
E.S. CENTRAL	248	222	48	190	–	1	6	–	3	27
Ky.	13	11	15	60	–	–	–	–	–	5
Tenn.	49	85	16	58	–	–	1	–	–	16
Ala.	80	71	7	62	–	1	5	–	3	6
Miss.	106	55	10	10	–	–	–	–	–	–
W.S. CENTRAL	905	692	35	153	1	1	2	–	–	56
Ark.	27	11	5	5	1	–	–	–	–	12
La.	168	108	13	43	–	–	–	–	–	1
Okla.	16	18	2	28	–	1	2	–	–	16
Tex.	694	555	15	77	–	–	–	–	–	27
MOUNTAIN	81	67	16	63	1	–	2	–	–	6
Mont.	–	1	1	3	–	–	–	–	–	3
Idaho	1	1	–	2	–	–	–	–	–	–
Wyo.	6	1	1	1	–	–	–	–	–	1
Colo.	25	15	–	8	–	–	–	–	–	–
N. Mex.	16	15	3	12	–	–	–	–	–	1
Ariz.	14	17	6	26	–	–	2	–	–	1
Utah	2	–	–	–	1	–	–	–	–	–
Nev.	17	17	5	11	–	–	–	–	–	–
PACIFIC	407	425	99	486	–	3	14	–	1	56
Wash.	–	10	8	24	–	–	–	–	–	–
Oreg.	18	10	2	9	–	–	–	–	–	–
Calif.	381	395	81	427	–	2	13	–	1	52
Alaska	1	1	–	8	–	–	–	–	–	4
Hawaii	7	9	8	18	–	1	1	–	–	–
Guam	–	–	U	–	–	U	–	U	–	–
P.R.	28	55	–	7	–	–	–	–	–	2
V.I.	–	–	–	1	–	–	–	–	–	–
Pac. Trust Terr.	–	–	U	–	–	U	–	U	–	–

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending February 6, 1982 (5th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	658	461	145	20	13	19	58
Boston, Mass.	194	128	42	9	6	9	32
Bridgeport, Conn.	51	39	11	1	–	–	5
Cambridge, Mass.	17	14	3	–	–	–	4
Fall River, Mass.	25	22	3	–	–	–	1
Hartford, Conn.	33	16	11	3	1	2	–
Lowell, Mass.	20	15	4	–	1	–	–
Lynn, Mass.	22	20	2	–	–	–	–
New Bedford, Mass.	25	20	3	–	–	2	–
New Haven, Conn.	60	39	11	3	2	5	4
Providence, R.I.	66	34	29	1	1	1	3
Somerville, Mass.	10	7	3	–	–	–	–
Springfield, Mass.	39	30	7	1	1	–	3
Waterbury, Conn.	36	31	4	1	–	–	3
Worcester, Mass.	60	46	12	1	1	–	3
MID. ATLANTIC	2,820	1,889	622	151	77	79	117
Albany, N.Y.	50	30	11	3	4	2	–
Allentown, Pa.	23	16	6	–	1	–	–
Buffalo, N.Y.	159	107	33	11	4	4	6
Camden, N.J.	46	25	16	1	2	2	1
Elizabeth, N.J.	29	19	6	2	2	–	1
Erie, Pa.†	43	33	6	2	1	1	2
Jersey City, N.J.	42	30	10	–	1	1	2
N.Y. City, N.Y.	1,533	1,011	352	88	40	42	56
Newark, N.J.	77	48	14	5	5	3	12
Paterson, N.J.§	32	26	–	3	–	3	–
Philadelphia, Pa.†	306	191	74	22	7	12	18
Pittsburgh, Pa.†	74	49	19	2	2	2	4
Reading, Pa.	29	25	4	–	–	–	3
Rochester, N.Y.	127	90	28	3	3	3	4
Schenectady, N.Y.	44	34	8	–	2	–	3
Scranton, Pa.†	25	19	5	1	–	–	1
Syracuse, N.Y.	79	58	16	1	1	3	1
Trenton, N.J.	44	33	9	1	–	1	–
Utica, N.Y.	19	13	3	3	–	–	2
Yonkers, N.Y.	39	32	2	3	2	–	1
E.N. CENTRAL	2,247	1,424	537	142	66	77	69
Akron, Ohio	75	47	16	6	3	3	–
Canton, Ohio	45	35	7	3	–	–	5
Chicago, Ill.	543	333	139	47	13	11	9
Cincinnati, Ohio	138	83	35	4	10	6	11
Cleveland, Ohio	156	99	38	4	4	11	1
Columbus, Ohio	165	94	55	8	3	5	9
Dayton, Ohio	134	78	39	7	4	6	2
Detroit, Mich.	220	132	48	23	7	10	3
Evansville, Ind.	48	33	5	5	4	1	3
Fort Wayne, Ind.	45	32	9	1	2	1	2
Gary, Ind.	14	8	3	2	–	1	2
Grand Rapids, Mich.	56	38	9	2	3	4	–
Indianapolis, Ind.	143	84	36	12	3	7	2
Madison, Wis.	58	39	11	2	5	1	5
Milwaukee, Wis.	140	100	26	7	3	4	3
Peoria, Ill.	24	17	5	–	1	1	1
Rockford, Ill.	46	34	8	2	–	2	–
South Bend, Ind.	45	31	13	–	–	1	5
Toledo, Ohio	94	66	23	4	–	1	4
Youngstown, Ohio	58	41	12	3	1	1	2
W.N. CENTRAL	755	522	154	35	18	26	25
Des Moines, Iowa	56	34	14	7	–	1	2
Duluth, Minn.	34	28	3	1	1	1	2
Kansas City, Kans.	42	26	10	3	1	2	2
Kansas City, Mo.	125	72	34	6	6	7	12
Lincoln, Nebr.	45	30	15	–	–	–	1
Minneapolis, Minn.	95	67	20	5	–	3	–
Omaha, Nebr.	98	72	19	1	2	4	3
St. Louis, Mo.	134	101	17	8	4	4	2
St. Paul, Minn.	51	36	12	2	1	–	–
Wichita, Kans.	75	56	10	2	3	4	1

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,132	656	303	82	35	55	40
Atlanta, Ga.	161	97	37	13	2	12	7
Baltimore, Md.	102	60	29	3	4	6	2
Charlotte, N.C.	75	33	27	9	2	4	2
Jacksonville, Fla.	100	64	24	3	6	3	1
Miami, Fla.	103	66	23	9	2	3	1
Norfolk, Va.	46	29	13	1	1	2	3
Richmond, Va.	86	50	29	4	3	–	8
Savannah, Ga.	49	26	15	2	2	4	3
St. Petersburg, Fla.	92	74	12	2	1	3	3
Tampa, Fla.	63	46	12	–	1	4	5
Washington, D.C.	217	93	66	35	10	12	4
Wilmington, Del.	38	18	16	1	1	2	1
E.S. CENTRAL	837	497	201	62	33	44	44
Birmingham, Ala.	178	106	44	17	4	7	3
Chattanooga, Tenn.	55	36	13	3	–	3	5
Knoxville, Tenn.	45	29	11	5	–	–	–
Louisville, Ky.	104	63	29	7	3	2	11
Memphis, Tenn.	223	129	44	13	15	22	8
Mobile, Ala.	59	38	11	4	5	1	6
Montgomery, Ala.	59	38	12	4	3	2	1
Nashville, Tenn.	114	58	37	9	3	7	10
W.S. CENTRAL	1,345	787	304	104	57	93	42
Austin, Tex.	60	45	8	4	2	1	4
Baton Rouge, La.	58	40	10	5	–	3	2
Corpus Christi, Tex.	46	29	14	1	1	1	1
Dallas, Tex.	194	116	49	16	8	5	2
El Paso, Tex.	79	39	19	3	5	13	7
Fort Worth, Tex.	101	57	23	8	4	9	3
Houston, Tex.	216	95	49	23	16	33	4
Little Rock, Ark.	75	47	17	3	3	5	4
New Orleans, La.	173	97	42	17	5	12	2
San Antonio, Tex.	186	115	47	9	9	6	7
Shreveport, La.	66	47	11	6	–	2	1
Tulsa, Okla.	91	60	15	9	4	3	5
MOUNTAIN	665	410	142	49	39	25	33
Albuquerque, N. Mex.	66	20	11	18	16	1	1
Colo. Springs, Colo.	30	19	9	–	1	1	1
Denver, Colo.	107	71	21	4	1	10	3
Las Vegas, Nev.	61	38	18	4	1	–	3
Ogden, Utah	20	12	5	1	1	1	1
Phoenix, Ariz.	183	118	41	11	9	4	6
Pueblo, Colo.	26	21	1	3	1	–	1
Salt Lake City, Utah	53	27	15	5	3	3	–
Tucson, Ariz.	119	84	21	3	6	5	17
PACIFIC	1,814	1,244	363	105	44	58	85
Berkeley, Calif.	24	17	6	–	1	–	1
Fresno, Calif.	70	43	19	4	–	4	4
Glendale, Calif.	34	27	7	–	–	–	1
Honolulu, Hawaii	63	42	9	3	6	3	11
Long Beach, Calif.	110	80	23	5	1	1	3
Los Angeles, Calif.	452	304	91	32	11	14	17
Oakland, Calif.	70	39	20	3	5	3	1
Pasadena, Calif.	58	42	10	3	1	2	–
Portland, Oreg.	125	79	21	6	5	14	–
Sacramento, Calif.	77	56	17	1	2	1	6
San Diego, Calif.	126	86	32	3	3	2	8
San Francisco, Calif.	188	124	41	20	2	1	5
San Jose, Calif.	193	146	28	11	4	4	19
Seattle, Wash.	125	82	25	11	2	5	1
Spokane, Wash.	62	48	11	–	1	2	6
Tacoma, Wash.	37	29	3	3	–	2	2
TOTAL	12,273††	7,890	2,771	750	382	476	513

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past 4 weeks.

Reye Syndrome — Continued

4. CDC. Reye syndrome—Ohio, Michigan. MMWR 1980;29:532, 537-9.
5. Consensus Conference: Diagnosis and treatment of Reye's syndrome. JAMA 1981; 26:2441-4.
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7. Summary of Reye Syndrome Consultants, October 13-14, 1981, CDC.

Epidemiologic Notes and Reports

A Technique for Rapid Epidemiologic Assessment — Nevada

In an effort to obtain information on perinatal health that could be useful in guiding local public health programs, a limited-sample birth survey was conducted in Clark County, Nevada, during 1981. By telephone interview, a public health nurse queried 200 women who had delivered babies 2-5 months previously. The first 100 interviews, conducted in May and June, involved mothers who had delivered in January and February, 1981; the remaining 100 interviews, in August and September, were with mothers who had delivered in June and July. Only mothers who delivered single, live-born infants were considered. The public health nurse searched local telephone directories for numbers to match the names and addresses of 1,271 mothers listed on birth records, found 425 numbers, and then attempted to telephone each mother. Of 201 mothers contacted, 1 declined to be interviewed.

The questionnaire used was a 1-page, standard-grid, modular form that could be administered in approximately 20 minutes. Questions sought information on such prenatal maternal activities as smoking and drinking habits and previous contraceptive use; the birth itself; and various postpartum maternal and infant events, such as illness and feeding choices.

Preliminary analysis of data obtained by the nurse indicated that 80 (40%) of the 200 mothers interviewed reported that they and/or their infants had had 1 or more infectious illnesses (as defined by the mother) during the first 30 days after delivery. Reported maternal illnesses were compatible with the following diagnoses: genital infections (11), respiratory infections (12), gastrointestinal illness (10), skin pustules/boils (8), mastitis (8), and cystitis (5). Illnesses reported for infants included skin pustules/boils (23), eye infections (32), respiratory infections (19), gastrointestinal illness (14), infection of the umbilical stump (5), and other (8). Although some of these conditions were self-limited, 27 mothers and 56 infants received physician care, usually including antibiotics.

Fifty-seven (28.5%) of the women reported smoking a total of approximately 234,000 cigarettes during their pregnancies, averaging 4,100 cigarettes per pregnancy or 15 per day. The neonates of these 57 smokers averaged 6.9 pounds, approximately 0.9 pounds less than the 7.8 pounds average birth weight of infants born to 143 mothers who denied smoking during pregnancy.

Although 102 (51%) of the women avoided all alcohol consumption during their pregnancy, 98 reported drinking 1 or more types of alcoholic beverages. The following beverages, in varied amounts, were consumed: beer (44 women), wine (72), and distilled spirits (38).

During the pregnancies under consideration, 188 (94%) women reported taking multivitamins; 87 (43.5%), Tylenol*; 55 (27.5%), iron; 51 (25.5%), Bendectin*; 30 (15%), calcium; 24 (12%), antihistamines; 17 (8.5%), aspirin; 16 (8%), penicillin; 12 (6%), other antibiotics; 8 (4%),sleep medication; and 9 (4.5%), other medications.

*Inclusion of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Rapid Epidemiologic Assessment — Continued

Thirty-eight (19%) of the mothers reported exposure to diagnostic X rays during pregnancy: dental (23), chest (8), abdominal (3), pelvic (3), wrist (2). Three had occupational exposure to X rays.

Fifty mothers (25%) reported use of ultrasound imaging for management of their pregnancies, and 11 (5.5%) mothers (6 over age 30) had amniocentesis. More than 90% of the infants had been screened for metabolic defects.

Almost one-fifth of the women in this survey had their infants delivered by Cesarean section. For the 162 (81%) women who delivered vaginally, the average hospital stay was 2.1 days, hospital costs were $1,386, and the obstetrician fee was $817. For the 38 (19%) women who had Cesarean sections, the average hospital stay was 4.9 days, hospital costs were $3,767, and the obstetrician fee was $1,200.

None of the 200 birth certificates reported any congenital malformations. However, 21 of the mothers reported the following defects for their infants: cutaneous birth marks (6), congenital dislocation of the hip (3), feet turned in (4), feet turned out (1), cleft palate and lip (1), umbilical hernias (1), other hernias (1), urethra too small (1), sunken chest (1), ptosis of eyelids (1), and skin tags (1).

Breast-feeding was begun by 136 (68%) of the mothers. When they were contacted 2-5 months after delivery, 38 (19%) were still breast-feeding.

Of the 200 women interviewed, 191 (95.5%) had used contraceptives at some time. Of the 9 who stated they had never used any contraceptive before their recent pregnancies, 2 of these had since used contraceptives, and 1 other (a diabetic who delivered an 11 pound 8 ounce infant) planned to be sterilized soon. Overall, 30.5% of the 200 mothers and 16.5% of the 200 fathers had either been sterilized since the recent delivery or were planning to be sterilized. Sixty-eight mothers (34%) reported having had a total of 89 prior abortions; 35 of these were stated to have been induced.

Reported by OH Ravenholt, MD, Director, Clark County Health District, Las Vegas, Nevada; Office of the Centers Director, CDC.

Editorial Note: The Nevada birth survey demonstrates that certain types of potentially useful public health information can be obtained in a cost- and personnel-effective manner by a limited-sample telephone survey. Limitations to such a survey include: 1) only persons with telephones who were home during the day were included in the sample; hence, persons selected and contacted were not fully representative of the entire population, and 2) the small numbers limit the kinds of analyses that can be done. This type of survey may, however, allow rapid epidemiologic assessment of local situations, trends, and attitudes useful in planning local health programs and applying limited resources to the most essential areas. Also, the response rate in this type of survey is ordinarily high. In the Clark County survey, only 1 of 201 women contacted declined to be interviewed. In addition, the single-sheet, standard-grid questionnaire is relatively inexpensive to produce and administer, and data can be easily extracted.

One important finding in this survey was that postpartum infections remain a frequently perceived problem among Clark County mothers and their infants and deserve more intensive surveillance than ordinarily provided. Since newborns and mothers usually are discharged from hospitals before incubation periods for most microorganisms have elapsed, special surveillance and feedback of information to hospitals is essential for effective control of nosocomial infections among these 2 groups (*1*).

Data on the exposure of pregnant women to alcohol, drugs, radiation, and smoking can be used to improve educational programs. Smoking, now the most prevalent preventable cause

Rapid Epidemiologic Assessment — Continued

of death in the United States, and a foremost cause of reduced birth weight (*2*), is still widespread in this study population sample despite all evidence that "the risk of spontaneous abortion, fetal death, and neonatal death increases directly with increasing levels of maternal smoking during pregnancy" (*3*).

References

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2. Ravenholt RT, Levinski MJ, Nellist DJ, Takenaga M. Effects of smoking upon reproduction. Am J Obstet Gynecol 1966;96:267-81.
3. Office on Smoking and Health. The health consequences of smoking for women. Rockville, Md.: US Public Health Service. Office of the Surgeon General, 1980. (US Dept of Health and Human Services).

Current Trends

Tuberculosis — United States 1981

A total of 27,412 cases of tuberculosis were reported to CDC in 1981. This figure, considered a provisional total until final corrected data for 1981 are received by the Tuberculosis Control Division, represents a decrease of 2.0% (571 cases) below the 1980 provisional total. The 1981 provisional case rate is 12.0/100,000 population, 3.2% lower than in 1980. However, the 1980 provisional data were based on a 53-week epidemiologic year, while the 1981 data cover a 52-week period (*1*). Based on these provisional numbers, the final tuberculosis case count for 1981 is expected to be comparable to that for 1980.

Before 1979 the number of tuberculosis cases decreased at a mean annual rate of 4.2%. In 1979 the decrease was 3.0%, and in 1980, the number of cases increased 0.3%. The provisional data for 1981 suggest that the secular trend that was previously downward, has leveled off.

Reported by Tuberculosis Control Div, Center for Prevention Svcs, CDC.

Reference

1. CDC. Tuberculosis—United States, 1980. MMWR 1981;30:55-6.

Influenza Update — United States

Influenza virus isolates from patients with sporadic cases of respiratory illness continue to be reported. An influenza type B isolate, the first from Michigan this season, was obtained in Ann Arbor from a college student, who had onset of influenza in the last week of January. Further isolations of influenza A(H1N1) and B in mid and late January have been reported from Houston: the seasonal totals from Houston now include 7 type A and 68 type B isolates. Influenza type B virus was also isolated on January 27 from a 15-year-old patient with respiratory illness in Phoenix, Arizona. This was the first isolate of the season reported from Phoenix.

Tucson is the only locality in the United States with current respiratory illness that is reporting influenza isolates. Influenza B has been isolated sporadically this season in the following states: Arkansas, California, Colorado, Hawaii, Michigan, Nevada, New Mexico, New York, Texas, and Wisconsin. Influenza A(H1N1) has been isolated sporadically in California, New Jersey, Texas, and Utah. Influenza B isolates tested at CDC resemble B/Singapore/222/79, and influenza A(H1N1) isolates resemble A/England/333/80.

Tuberculosis – Continued

Reported by A Monto, MD, University of Michigan, Ann Arbor, W Hall, MD, N Hayner, MD, State Epidemiologist, Michigan Dept of Public Health; K Starko, MD, Maricopa County, J Sam PhD, J Sacks, State Epidemiologist, Arizona Dept of Health Svcs; P Glezen, MD, Influenza Research Center, Houston, C Webb, Jr, MD, State Epidemiologist, Texas Dept of Health; Immunization Div, Center for Prevention Svcs, Influenza Br, Viral Diseases Div, Center for Infectious Diseases, CDC.

Influenza—Japan

Japanese health authorities have reported to the World Health Organization extensive influenza activity among school-age children since mid-January. Influenza B strains (B/Singapore/222/79-like) have been isolated in 30 prefectures. In northern parts of Japan, small outbreaks of influenza type A(H3N2) have been occurring. Sporadic cases of influenza A(H1N1) have also been reported.

Reported by WHO Collaborating Influenza Center, Center for Infectious Diseases, CDC.

Notice to Readers

Marketing of Human Diploid Cell Strain Rabies Vaccine

Recently completed negotiations between Wistar Institute, Wyeth Laboratories, and Merieux Institute have resulted in an agreement whereby Merieux Institute is now able to market its vaccine directly to the private medical sector. Because some states may wish to continue their existing distribution systems, Merieux Institute representatives will be contacting state health departments within the next 2 weeks to determine how each state wishes to have the Merieux human diploid cell strain (HDCS) vaccine distributed.

For those states that wish to relinquish the distribution of vaccine in favor of private-sector sales, the vaccine will be available for purchase through either the Merieux offices in Miami, Florida, or a distribution point nearer the purchaser.

Reported by Enteric and Neurotropic Viral Diseases Br, Center for Infectious Diseases, CDC.

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